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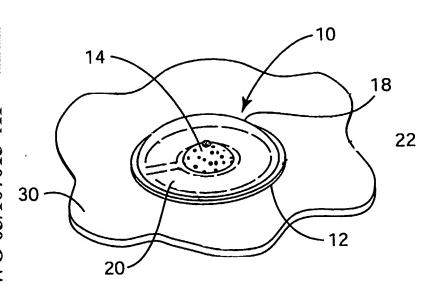
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— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM,

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(54) Title: SHOCK INDICATOR



(57) Abstract: A shock indicator is described comprising (A) a base having a first side and a second side; (B) an indicator associated with the first side of the base, the indicator comprising a plurality of indicator subparts, the subparts comprising solid material arranged (i) in a first configuration when the shock indicator is in a first state prior to a shock event, and (ii) in a second configuration when the shock indicator is in a second state following a shock event; and (C) means associated with the second side of the base for attachment of the shock indicator to a surface. A method of manufacture is also provided.

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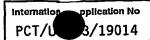
 as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

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| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|--|
| Х | PATENT ABSTRACTS OF JAPAN vol. 2000, no. 21, 3 August 2001 (2001-08-03) -& JP 2001 099854 A (AKEBONO BRAKE IND CO LTD), 13 April 2001 (2001-04-13) abstract; figures | 1-6,10, 18,19, 29,30, 33,35, 37,38, 43,44,46 |
| X | DE 197 24 440 A (PARTHY KAI) 17 December 1998 (1998-12-17) the whole document | 1-7, 9-14, 18-27, 29-32, 35, 38-40, 43-45,48 |
| | -/ | |

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INTERNATIONAL SEARCH REPORT

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| Category Citation of document, with indication, where appropriate, of the relevant passages X US 6 272 901 B1 (TAKEUCHI KAZUHIRO ET AL) 14 August 2001 (2001-08-14) column 8, line 10 -column 9, line 31 column 10, line 1 - line 31 column 12, line 49 -column 13, line 28; figures A PATENT ABSTRACTS OF JAPAN vol. 1996, no. 06, 28 June 1996 (1996-06-28) -& JP 08 043425 A (MATSUSHITA ELECTRIC IND | 1-4, 8-15, 18-30, 37,38, 40,41, 43-46 |
|---|--|
| US 6 272 901 B1 (TAKEUCHI KAZUHIRO ET AL) 14 August 2001 (2001-08-14) column 8, line 10 -column 9, line 31 column 10, line 1 - line 31 column 12, line 49 -column 13, line 28; figures A PATENT ABSTRACTS OF JAPAN vol. 1996, no. 06, 28 June 1996 (1996-06-28) | 1-4, 8-15, 18-30, 37,38, 40,41, 43-46 |
| column 8, line 10 -column 9, line 31 column 10, line 1 - line 31 column 12, line 49 -column 13, line 28; figures A PATENT ABSTRACTS OF JAPAN vol. 1996, no. 06, 28 June 1996 (1996-06-28) | 8-15, 18-30, 37,38, 40,41, 43-46 |
| figures A PATENT ABSTRACTS OF JAPAN vol. 1996, no. 06, 28 June 1996 (1996-06-28) | 1-48 |
| vol. 1996, no. 06, 28 June 1996 (1996-06-28) | 1–48 |
| CO LTD), 16 February 1996 (1996-02-16) abstract; figures | |
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INTERNATIONAL SEARCH REPORT

Information patent family members

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| Patent document cited in search report | | Publication date | | Patent family member(s) | | Publication date |
|--|----|------------------|----------|-------------------------------------|----|--------------------------|
| JP 2001099854 | Α | 13-04-2001 | NONE | | | |
| DE 19724440 | Α | 17-12-1998 | DE | 19724440 | A1 | 17-12-1998 |
| US 6272901 | B1 | 14-08-2001 | JP CN | 11190745 1229191 | | 13-07-1999 22-09-1999 |
| JP 08043425 4 | A | | NONE | •هر ن <u>ه ند ند نه خری ه. په د</u> | | |